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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/822,223	04/08/2004	Toshifumi Komatsu	2970.107USU1	1323

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EXAMINER
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SULLIVAN, CALEEN O

ART UNIT	PAPER NUMBER
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1756

MAIL DATE	DELIVERY MODE
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08/24/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/822,223

Applicant(s)

KOMATSU ET AL.

Examiner

Caleen O. Sullivan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 16 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>07/05/07</u>  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Response to Amendment*

1. Examiner acknowledges the amendment to the specification to include the Priority information for the present application.
2. Applicant's amendments to claims 5, 7, 11 and the renumbering of claims 13-20 have overcome the objection presented in the previous Office Action; therefore, Examiner withdraws the objection.
3. Applicant's amendments to claims 3, 5 and 18 have overcome the rejection of claims 3 and 5-20 under 35 USC 112 second paragraph presented in the previous Office Action; therefore, Examiner withdraws this rejection.
4. Applicant's amendments to claims 1, 3, 5, 7, 11 and 14-20 as well as the arguments presented have failed to overcome the rejection of claim 1 under 35 USC 102(a) over Insatsu JP 57185981, the rejection of claims 2-4 under 35 USC 103(a) over Insatsu in view of Kimura ('135) and the rejection of claims 5-20 over Insatsu in view of Johnson ('406) or Couture ('971) and Kimura ('135). Therefore, Examiner restates the grounds of rejection presented in the previous Office Action below.
5. Applicant's amendments and arguments presented have overcome the rejection of claims 5, 8-9, 13 and 19-20 under 35 USC 101 over claims 1-2, 4, 8-9 11 and 15 of US Patent No. 6,037,106, the obvious double patenting rejection of claims 5, 8-9, 13 and 19-20 over claims 1-2, 4, 8-9, 11 and 15 of US Patent No. 6,037,106 and the obvious double patenting rejection of claims 1, 5, 8, 13 and 15-20 over claims 1-13 and 15 of US Patent No. 7,074,358; therefore, Examiner withdraws the rejections.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

7. Claim 1 is rejected under 35 U.S.C. 102(a) as being anticipated by Insatsu ('981).

Insatsu ('981) teaches a method of manufacturing a die for molding. In this method a photosetting or photo-degrading resist film (Fig.1, layer 2) is coated on the inside surface of a die (Fig.1, layer 1).

This disclosure meets the limitations of claim 1 where a mold is provided and the mold is coated with an etch-resistant material, because just as recited in the claim 1 where the etch resistant layer is selectively removed, only a portion of the photosetting or photodegrading resist layer is removed.

Next, Insatsu ('981) teaches that a film with designs or patterns is put over the resist film (Fig.1, layer 3), and then exposed to create the pattern in the resist film. (Fig.2, layer 2). This disclosure teaches the limitations of claims 1 where a photosensitive mask is applied over a portion of the etch resistant material while leaving other portions exposed. The unexposed or non-photoset portions of the resist film are washed away using a liquid, and then the inside surface of the die is etched and after the resist film is washed away. (Abstract, Fig.4, layer 1). This disclosure meets the limitation of claim 1 where the exposed portions of the mold are etched.

Insatsu ('981) teaches all the limitations of claim 1.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the

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subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Insatsu ('981) in view of Kimura ('135). Insatsu ('981) is relied upon as discussed in the rejection of claim 1 under 35 USC 102(a) above in paragraph 6. Insatsu ('981) fails to disclose a mask that is readily stretchable by at least 10% or a step of wetting the mask, that comprises an ethylenically unsaturated material, to increase stretch-ability before it is applied over the etch-resistant material as recited in claims 2-4.

However, Kimura ('135) discloses such a mask. Kimura ('135) teaches a photosensitive laminate that is laminated on a substrate and acts as a mask layer for the subsequent patterning of a substrate in a process of forming a printed wiring board. The laminate film is comprised of a photosensitive layer that has a high longitudinal elongation load (See, col. 3, 60-67), and it can be favorably conformed to the surface unevenness of a target on which the transfer layer is laminated (See, col. 1, 10-14). Moreover, Kimura ('135) discloses the laminate can be comprised of a vinyl monomer such as diethylaminoethyl acrylate. (See, col. 4, 23-34). Kimura goes on to disclose that laminate is exposed and developed so the substrate can be patterned according to the pattern formed in the laminate film. This disclosure meets the limitations of claims 2-4.

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It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to modify the teachings of Insatsu ('981) with the teachings of Kimura ('135) because Kimura teaches that one can use a flexible photosensitive laminate as a mask layer to form a pattern in a substrate by etching.

11. Claims 5-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Insatsu ('981) in view of Johnson ('406) or Couture ('971) and Kimura ('135). Insatsu ('981) is relied upon as discussed in the rejection of claim 1 under 35 USC 102(a) above in paragraph 6. Kimura ('135) is relied upon as discussed in the rejection of claims 2-4 under 35 USC 103(a) in paragraph 9 above.

Insatsu ('981) fails to teach a step of removing portions of the acid resistant material corresponding to the removed portions of the coating a photosensitive laminate using an abrasive as recited in claim 5. Insatsu ('981) also fails to teach a photosensitive laminate that is developable with aqueous media as recited in claim 8, or a photosensitive laminate with photosensitive material comprised of a photopolymer as recited in claim 9. Insatsu ('981) also fails to disclose a photosensitive laminate with photosensitive material that is comprised of a photoinitiator and a monomer, an oligomer, or a combination of both as recited in claim 10.

Moreover, Insatsu ('981) fail to disclose the limitation of claims 12-13 where the photosensitive material comprises an acrylate or a water-soluble photosensitive vinyl polymer such as a polyvinyl alcohol polymer. Furthermore, Insatsu ('981) fails to teach the limitation of claim 15, where the photopolymer has pendant photo-crosslinkable styryl groups, or the limitation of claim 18 where the first layer further comprises a plasticizer, or the limitation of claim 19, where the laminate further comprises a support layer. Lastly, Insatsu ('981) fails to teach a photosensitive layer of a laminate film that has photosensitive resin, binder resin and plasticizer present in the composition at the weight percents recited in claims 14 and 16-17.

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However, Johnson ('406) and Couture ('971) teach such a process step and a photosensitive laminate as recited in the aforementioned claims. Johnson ('406) discloses an imageable photoresist laminate that is useful with abrasive etching. (See, col. 2, 57-61). Similarly, Couture (971) also discloses a photosensitive mask laminate that can be used to protect selected portions of a target surface during a sandblast decorative process. (Abstract).

Johnson ('406) discloses the laminate includes a carrier substrate as recited in claim 19 and photosensitive layer (col. 2, 1-8) that is patterned, developed by aqueous washing as recited in claim 8 to remove unexposed photosensitive resin (See, col. 2, 51-54), and then transferred to a substrate for selective surface modification by abrasive etching as recited in claim 5 using sandblasting techniques. (See, col. 1, 20-24). Similarly, Couture ('971) discloses a sandblast mask laminate that includes a structural support layer a photoimageable mask layer and a pressure sensitive adhesive layer. (See, col.2, 59-66).

Claims 6-7 recite the same limitation as claim 2-3 rejected under 35 USC 103(a), in paragraph 6 above, and the rejection of claims 2-3 also forms a basis of rejection for the limitation of claim 20, which recites the photosensitive laminate film is flexible.

Claim 11 recites the same limitation of claim 4, rejected under 35 USC 103(a), in paragraph 6 above.

Johnson ('406) goes on to disclose that the photosensitive layer contains negative photosensitive material that interacts with light to transform the composition from a soluble to a less soluble state due to cross-linking of substances in the layer after exposure to actinic radiation. (See, col. 3, 43-49). This disclosure meets the limitation of claim 9. Similarly, Couture ('971) discloses the photopolymers that are self cross-linking can also comprise the photosensitive layer of the laminate film. (See, col.4, 32-36).

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Johnson ('406) gives examples of possible compounds that can comprise the photosensitive material of the laminate including binders such as polyvinyl alcohol, as well as copolymers of acrylate materials or styrene, which meets the limitation of claims 10, 2-13 and 15. Couture ('971) also teaches that the photosensitive layer of the laminate can include a monomer or polymer and a photoinitiator including compounds such as polyvinyl alcohol, acrylate or urethane based monomers and oligomers, as well as photosensitive compounds based on photoinitiated dimerization involving styryl pendant groups. (See, col.4, 20-35).

Johnson ('406) then discloses the photosensitive layer can include a plasticizer as part of the composition as recited in claim 18. (See, col. 5, 1-3). Couture ('971) also discloses the preferred composition of the laminate includes a photosensitive component, a binding resin, a tack imparting composition and optionally a plasticizer. (See, col.3, 68-col.4, 3).

Johnson ('406) includes a table, Table I: Coating Emulsion Percents by Weight (see, col. 6, 35-45) that delineates the percentages by weight at which the photosensitive resin, binder resin and plasticizer should be present in the composition, which fall within the ranges of weight percents recited in claims 14 and 16-17. Similarly, Couture ('971) includes a table, TABLE (See, col.6, 30-37) that also includes the percentages at which the resin, binder and plasticizer should be present in the composition of the photosensitive material of the laminate.

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to modify the teachings of Insatsu ('981) with the teachings of Johnson ('406) or Couture ('971) because Johnson ('406) and Couture ('971) teach that one can use a photosensitive laminate film as a mask, as part of process that includes abrasive etching such as sandblasting in order to etch portions of the underlying target or substrate according to the pattern in the laminate film.



*Response to Arguments*

12. Applicant's arguments filed 07/16/07 have been fully considered but they are not persuasive.

Applicant argues that Insatsu fails to anticipate the limitations of claim 1 because Insatsu fails to teach a process where a photosensitive mask does not come in contact with the mold surface but rather is in contact with the etchant-resistant material and is therefore distinctive from the etchant material. While Insatsu does coat a resin on the mold surface, Insatsu does include a process step where a patterned mask is provided that covers portions of the etchant resistant layer, which is then exposed to light via the patterned mask layer, which causes the exposed portions of etchant resistant material to be cured. The etchant resistant material is then selectively removed based on the exposure and then the exposed portions of the mold are etched. Therefore, Insatsu does disclose the position of the materials, the manner in which the materials are applied as well as the function of the materials that is recited in claim 1 of the present application. Therefore, Insatsu does anticipate claim 1 and the rejection under 35 USC 102(a) is proper.

Applicant argues these same alleged deficiencies of Insatsu ('981) are applicable in the rejection of claims 2-4 under 35 USC 103(a) over Insatsu ('981) in view of Kimura ('135) and the rejection of claims 5-20 under 35 USC 103(a) over Insatsu ('981) in view of Johnson ('406) or Couture ('971) and Kimura ('135). Applicant argues that Kimura ('135) and Johnson ('406) or Couture ('971) fail to cure the alleged deficiencies of Insatsu ('981); therefore, Applicant argues the references in combination fail to teach and or suggest all the limitations of claims 2-4 as well as claims 5-20. However, as stated above Examiner maintains that Insatsu ('981) does teach the materials used, the position of the materials, the manner in which the materials are applied as well as

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the function of the materials that applicant recites in claims 2-4 and claims 5-20 of the present application. Therefore the rejections under 35 USC 103(a) of claims 2-4 and claims 5-20 are proper.

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

***Conclusion***

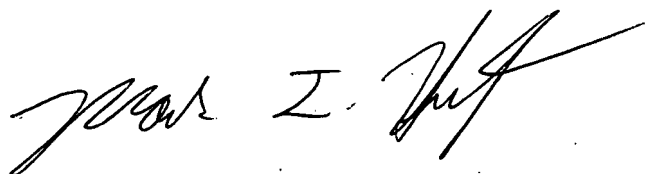
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Caleen O. Sullivan whose telephone number is 571-272-6569. The examiner can normally be reached on 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/COS/, 08/14/07.

A handwritten signature in black ink, appearing to read "Mark E. Huff", is written over the typed name and title.

MARK E. HUFF  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700